



# National Weather Service

## Storm Data and Unusual Weather Phenomena



September 2004

| Location | Date | Time<br>Local/<br>Standard | Path<br>Length<br>(Miles) | Path<br>Width<br>(Yards) | Number of<br>Persons<br>Killed | Number of<br>Persons<br>Injured | Estimated<br>Damage<br>Property | Estimated<br>Damage<br>Crops | Character of Storm |
|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------------------------------|---------------------------------|------------------------------|--------------------|
|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------------------------------|---------------------------------|------------------------------|--------------------|

### KENTUCKY, Northeast

**KYZ101>103-105**

**Greenup - Carter - Boyd - Lawrence**

|           |                |  |  |  |          |          |            |  |              |
|-----------|----------------|--|--|--|----------|----------|------------|--|--------------|
| <b>08</b> | <b>1300EST</b> |  |  |  |          |          |            |  |              |
| <b>09</b> | <b>0500EST</b> |  |  |  | <b>0</b> | <b>0</b> | <b>70K</b> |  | <b>Flood</b> |

Remnants of Hurricane Frances caused about a 30 hour rain event, from the afternoon of the 7th into the evening hours of the 8th. The heaviest rains fell during the morning of the 8th. Storm total amounts of 3 to 5 inches were widespread, with isolated amount of 5 to 6 inches. Some specific preliminary amounts included Olive Hill with 5.5 inches, Grayson Lake 5.1 inches, Charley and Blaine in Lawrence County with 5.0 inches, Cannonsburg had 4.8 inches, Grayson and Ashland measured 4.4 inches, while Warnock observed 3.5 inches.

Since the ground was dry, previous to this event, flooding was restricted mostly to roads and the usual low lying areas. However, some evacuations did occur in the town of Olive Hill. The Little Sandy River crested at 22.9 feet in Grayson early on the 9th. Flood stage is 21 feet.

This event set the stage for more significant high water, to follow later in the month.

**KYZ101>103-105**

**Greenup - Carter - Boyd - Lawrence**

|           |                |  |  |  |          |          |           |  |              |
|-----------|----------------|--|--|--|----------|----------|-----------|--|--------------|
| <b>17</b> | <b>0810EST</b> |  |  |  |          |          |           |  |              |
| <b>20</b> | <b>2200EST</b> |  |  |  | <b>0</b> | <b>0</b> | <b>1M</b> |  | <b>Flood</b> |

The remnants of Hurricane Ivan dumped 3.5 to 5.5 inches of rain, during a 30 hour period from late morning on Thursday the 16th, into the late afternoon of Friday the 17th. The heaviest rain was during the morning hours of the 18th. Some preliminary totals included Princess 5.3 inches, Grayson Lake 5.1 inches, Oldtown 4.6 inches, Warnock 4.5 inches, Grayson and Charley 4.3 inches, Greenup 4.0 inches, Cannonsburg 3.9 inches, and Louisa 3.7 inches.

Since the ground was still recovering from the effects of Hurricane Frances 8 days earlier, streams crested higher in most areas.

There was no structural damage to roads or bridges in Lawrence County, but a few homes had minor water damage. Boyd County had about 45 homes with minor to major damage. Several churches had water inside. Greenup County had evacuations along Tygarts Creek. The county reported about \$250,000 in damage to roads and bridges. Small streams in Carter County damaged roads. A bridge off Route 986 was destroyed.

On the evening of the 17th, the Little Sandy River rose above the 21 foot stage at Grayson. The crest was near 25.7 feet around dawn on the 18th. This was slightly higher than the 25.4 foot crest back in May of 2003. Yet, in March 2002, the crest was 29.2 feet. Erosion of river banks and flooded fields were common with this current event.

Since the axis of heavier rain went upstream to the Pittsburgh vicinity, the Ohio River rose on the 18th and 19th. The river crested at 54.2 feet at Ashland on the 20th, Flood stage is 52 feet. The crest on the Ohio River at Greenup Lock and Dam was 53.5 feet, remaining just below the 54 foot flood stage.

### OHIO, Southeast

**Jackson County**

**3 W Jackson to  
6 W Jackson**

|           |                |  |  |  |          |          |  |  |                     |
|-----------|----------------|--|--|--|----------|----------|--|--|---------------------|
| <b>04</b> | <b>1800EST</b> |  |  |  |          |          |  |  |                     |
|           | <b>1815EST</b> |  |  |  | <b>0</b> | <b>0</b> |  |  | <b>Funnel Cloud</b> |

Slow moving showers produced a rope like funnel cloud west of the city.



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|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------|---------------------------------|-------|--------------------|
|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------|---------------------------------|-------|--------------------|

### OHIO, Southeast

**OHZ066>067-075>076-083>087 Perry - Morgan - Athens - Washington - Jackson - Vinton - Meigs - Gallia - Lawrence**

|           |                |  |  |  |          |          |             |  |              |
|-----------|----------------|--|--|--|----------|----------|-------------|--|--------------|
| <b>08</b> | <b>1200EST</b> |  |  |  |          |          |             |  |              |
| <b>09</b> | <b>2200EST</b> |  |  |  | <b>0</b> | <b>0</b> | <b>3.5M</b> |  | <b>Flood</b> |

The low pressure remains of Hurricane Frances caused about a 30 hour rain event, from the afternoon of the 7th, into the evening hours of the 8th. A stalled frontal boundary helped trigger heavier convection on the northern, or leading edge, of the rain shield during the late afternoon and evening of the 7th. This initial convection caused the heavier storm totals to be over Morgan and Perry Counties, compared to points further south.

Storm totals of 4 to 7 inches were common, with isolated amounts both above and below those totals. Some specific preliminary totals include New Lexington with 7.5 inches, McConnelsville 6.6 inches, McArthur 6.3 inches, Salem Center 5.7 inches, Athens 5.5 inches, Gallipolis 5.1 inches, Carpenter 5.0 inches, South Point 4.7 inches, Newport and Nelsonville 4.6 inches, and finally Marietta 3.8 inches.

The Scalia Lab on the Ohio University campus in Athens reported a storm total of 5.3 inches. Other rain totals from spotters included 5.9 inches at Pageville of Meigs County, 5.7 inches from Darwin of Meigs County and Guysville of Athens County. Tupper's Plain of Meigs County measured 5.4 inches. A few automated gauges totaled 5.1 inches at Coolville, 4.9 inches at Kitts Hill, and 4.8 inches at Amesville.

Since the ground was dry prior to this event, most flooding was to roads and low lying areas. In Athens County, Sunday Creek surrounded buildings in Trimble and blocked streets. Some residents evacuated their homes as a precaution. Flooding remained minor. The gauge at Glouster crested at 16.4 feet on the 9th, well below the 19 foot crest observed back in May, 2004

However, flooding was more severe in Perry, Morgan, and Washington Counties, affecting some homes. In Perry County, around 50 homes had major damage, with 3 homes destroyed. Duck Creek flooded in Washington County, including around Elba and Lower Salem. In Washington County, one house was destroyed, while 7 homes had major damage. In Morgan County, 8 homes had major damage.

The Muskingum River crested at 11.7 feet early on the 9th at McConnelsville in Morgan County. Flood stage is 11 feet. The Shade river near Chester of Meigs County rose from 4.7 feet around 0500E on the 8th, to 21.5 feet around 1830E on the 9th. Bankfull is around 17 feet.

This event set the stage for a more widespread flood across southeast Ohio, to follow later in the month.

**OHZ066>067-075>076-084>087 Perry - Morgan - Athens - Washington - Vinton - Meigs - Gallia - Lawrence**

|           |                |  |  |  |          |          |              |  |              |
|-----------|----------------|--|--|--|----------|----------|--------------|--|--------------|
| <b>17</b> | <b>0815EST</b> |  |  |  |          |          |              |  |              |
| <b>21</b> | <b>1700EST</b> |  |  |  | <b>0</b> | <b>0</b> | <b>25.5M</b> |  | <b>Flood</b> |

Light rain spread north into southeast Ohio during the afternoon and evening hours of the 16th. The heavier rain from the remnants of Hurricane Ivan developed over Lawrence County before dawn on Friday the 17th, reaching the Athens and Marietta vicinity by 0900E on the 17th. By 1700E the heavy rain was pulling east and northeast, out of southeast Ohio. A rain event of 24 to 30 hours dumped 4 to 6.5 inches of rain. Some specific preliminary totals included Beverly 6.4 inches, McArthur 6 inches, McConnelsville 5.5 inches, Athens and Waterloo 5.1 inches, Marietta and Newport 4.8 inches, Gallipolis 4.3 inches, and Nelsonville 4 inches. Rains were not as heavy over central and northern portions of Perry County. New Lexington measured 2.4 inches. Spotters reported 6.2 inches from Guysville, 6.1 inches at Tupper's Plains, and 5.5 inches in Pageville.



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|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------|---------------------------------|-------|--------------------|

### OHIO, Southeast

Since the ground was still recovering from the effects of Hurricane Frances 8 days earlier, streams crested higher in many instances. The small stream flooding developed during the late morning and early afternoon period of the 17th. Serious small stream flooding occurred on such streams as Sunday Creek, Duck Creek, Racoon Creek, Little Racoon Creek, and Symmes Creek. On the 2 year old gauge at Bolins Mills on Racoon Creek, the crest was 17 feet, its highest. At Millfield on Sunday Creek, a crest of 24.5 feet established a new record. However, the upper reaches of Sunday Creek in Perry and northern Athens County were higher in May of 2004, than this event. For example, the gauge at Gloucester crested at 17.6 feet compared to 19 feet in May. Symmes Creek near Aid crested at 23.3 feet.

The smaller rivers, such as the Little Muskingum and Shade, saw serious flooding. The Little Muskingum River at Bloomfield crested at 31.1 feet, surpassing the 30.7 feet crest in 1998. The Rinard covered bridge, originally built in 1874, was shoved into the river. During a restoration project in the early 1990s, gaps between the wooden boards were taken out. Local residents think, without those gaps, the water pressure was greater, knocking the bridge off its supports. In this vicinity, general stores in Bloomfield and Wingett Run were flooded with 5 feet of water. The Shade River crested at 30 feet near Chester. The 1997 crest was at 31.4 feet.

The Hocking River at Athens crested slightly over its 20 foot flood stage at 20.8 feet. The crest occurred before dawn on the 18th at Athens.

The axis of heaviest rain ran up the main stem of the Ohio River toward Wheeling and Pittsburgh. Storm totals of 6 to 8 inches were seen there. This rain was almost direct local runoff into the upper Ohio River. As a result, a strong rise of 1 to 2 feet per hour was observed on the Ohio River during the Friday evening, the 17th. For example, between 1600E and 2100E, the Ohio River rose 9 feet at Willow Island Lock and Dam, and around 10 feet on the Marietta 2SW gauge. The 24 hour rise at Marietta was 22 feet in 24 hours, the greatest 24 hour rise there on record.

On the 18th and 19th, as most small streams were receding, moderate to major flooding occurred on the Ohio River from New Matamoras and Willow Island on down through Marietta, Belpre, Racine and Pomeroy. It was the highest stage since March 1964. The crest then dampened to minor flooding below the mouth of the Kanawha River. Some specific crests included Willow Island 44.8 feet, Marietta 2SW 42.4 feet, Belleville 45.8 feet, Racine 50.2 feet, Pomeroy 51.2 feet, and R C Bryd Lock and Dam 51 feet. The crest was 2 to 4 feet deep inside hundreds of Marietta businesses, plus on the order of 40 businesses in Meigs County including the town of Pomeroy.

In Washington County, the Red Cross surveyed 159 homes with major damage, with 60 homes destroyed. Two trailer parks were hit hard by flooding around Marietta. On the order of 400 to 500 businesses in the county were affected. State damage assessments had 56 homes with major damage in Athens County. In Meigs County, 16 homes had major damage and 1 house was destroyed. In Gallia County, 6 homes had major damage with 1 home destroyed. In Lawrence County, 8 homes had major damage and 3 were destroyed. In Vinton County, 5 homes had major damage and 2 homes were destroyed.

The FEMA disaster 1556 included this flood event.

### VIRGINIA, Northwest

NONE REPORTED.

### WEST VIRGINIA, West

**WVZ006>011-014**

**Cabell - Mason - Jackson - Wood - Pleasants - Tyler - Putnam**

|           |                            |          |          |             |              |
|-----------|----------------------------|----------|----------|-------------|--------------|
| <b>08</b> | <b>0854EST<br/>2100EST</b> | <b>0</b> | <b>0</b> | <b>110K</b> | <b>Flood</b> |
|-----------|----------------------------|----------|----------|-------------|--------------|

Remnants of Hurricane Frances caused about a 30 hour rainfall from the afternoon of the 7th into the evening of the 8th. The heaviest rains fell along the Ohio River counties from dawn to midday on the 8th. The low pressure center passed from south to north, through central West Virginia during the late afternoon and early evening on the 8th, before lifting into western Pennsylvania.

Storm total rain amounts of 4 to 5 inches were common. A spotter in Winfield reported a total of 5.6 inches. Cooperative observers at Southside in Mason County, Pea Ridge in Cabell County, and Ripley of Jackson County all had 4.9 inches. Ripley measured 4.8 inches. Middlebourne had 4.6 inches. Huntington airport had 4.5 inches, while the airport near Parkersburg had 4.1 inches.

Since the ground was dry previous to this event, small stream flooding was mainly restricted to roads and the usual lowest lying



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|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------|---------------------------------|-------|--------------------|
|----------|------|----------------------------|---------------------------|--------------------------|--------------------------------|---------|---------------------------------|-------|--------------------|

### WEST VIRGINIA, West

areas. In some urban areas, the flooding was slightly more significant. For example, Fourpole Creek flooded Ritter Park and streets in Huntington. Rivers remained within their banks. However, this event set the stage for more serious flooding, to follow later in the month.

WVZ005>011-013-015>017-024-027>028

Wayne - Cabell - Mason - Jackson - Wood - Pleasants - Tyler - Lincoln - Kanawha - Roane - Wirt - Mingo - Clay - Braxton

|    |         |  |  |  |   |   |      |  |       |
|----|---------|--|--|--|---|---|------|--|-------|
| 17 | 1100EST |  |  |  | 1 | 0 | 9.5M |  | Flood |
| 21 | 1200EST |  |  |  |   |   |      |  |       |

As the weakening Hurricane Ivan moved inland across Alabama, light rain began in southern West Virginia on the morning of the 16th. The rain shield moved into northern counties overnight. Heavy rain began before dawn on the 17th around Huntington. The heavier rain moved up the Ohio River counties and engulfed the Ravenswood, Parkersburg, and Sistersville vicinity during the mid morning on the 17th. The heavy rain continue along the Ohio River counties into the mid afternoon, before lifting north and east. The more significant rain rates pivoted through central West Virginia during the late afternoon hours on the 17th before diminishing to drizzle after dark that evening. The low pressure remains of Ivan moved northeast through eastern Tennessee that afternoon, then through southwest Virginia during the evening. The storm moved off the coast during the 18th.

A 30 to 36 hour duration event dumped 3.5 to 6 inches of rain. The upper range was concentrated along the Ohio River counties from Huntington through Parkersburg. A secondary maximum in the rain ran south from Parkersburg into northern Kanawha County. Preliminary storm totals from cooperative observers had R C Byrd Lock and Dam with 5.9 inches, Elizabeth 5.0 inches, Wayne 4.9 inches, Sandyville 4.8 inches, downtown Huntington 4.7 inches, downtown Parkersburg 4.6 inches, Ripley 4.5 inches, Charleston 4.2 inches, Huntington and Parkersburg airports 4.1 inches, and Middlebourne with 3.8 inches.

Since the remains of Hurricane Frances were just 8 days prior to this rain, small stream flooding was more significant with the remnants of Ivan. Some of the same streams went higher than earlier in the month. Residents of Enslow Park in Huntington, for example, were evacuated due to flooding from Fourpole Creek. Many secondary roads were blocked and closed by small stream flooding during the afternoon and early evening on the 17th. Kanawha Twomile flooded Bonham Elementary School in Kanawha County with 1 to 2.5 feet of water. Maintenance men for the school had to scramble up a ladder to the school roof, to wait out the high water. One of the workers said, "almost like a flip of your finger, that's how fast it happened. It was unreal."

During that Friday evening the 17th, a 32 year old male was walking west of Harts in Lincoln County and fell into swollen Frances Creek. He drowned and his body was discovered the next day. Preliminary findings from a state police investigation indicated the man was under the influence of either alcohol or illegal drugs.

Most of the small stream flooding receded by late Friday evening the 17th. However, even heavier rain fell over the northern panhandle of West Virginia into western Pennsylvania. Rain amounts of 6 to 8 inches were more common there. As a result, the main stem of the Ohio River rose 1 to 2 feet per hour during the evening of the 17th in the Sistersville to Parkersburg vicinity. For example, at Parkersburg the Ohio River rose from 25.6 feet at 1600E to 33.0 feet at 2200E on the 17th. A slower but steady rise continue into Saturday the 18th. Moderate to major river flooding occurred on the 18th and 19th from the Sistersville vicinity on down through Saint Marys, Williamstown, Vienna, Parkersburg, Ravenswood, and Point Pleasant. The flood wall protected the city of Parkersburg. Backwater also caused flooding, sometimes a few miles from the Ohio River. One example, was along the lower reaches of the Little Kanawha River in Wood County. The crest on the Ohio River dampened below the mouth of the Kanawha River, with mostly minor river flooding through Huntington and Kenova.

Specific crests include Willow Island Lock and Dam 44.8 feet, Marietta 2SW 42.4 feet, Parkersburg 43.7 feet, Belleville Lock and Dam 45.8 feet, Racine Lock and Dam 50.2 feet, Point Pleasant 44.6 feet, R C Byrd Lock and Dam 51 feet, and Huntington 51.3 feet. At Parkersburg, the crest was the highest level in 40 years. Back in March 1964, the river reached 45.2 feet at Parkersburg.

A FEMA disaster was declared. See declaration 1558 for details. However, the worst damage in West Virginia with this disaster was in the northern panhandle counties, compared to further south. In terms of damage to housing, Tyler County had 5 destroyed and 19 with major damage. Pleasants County had 21 homes destroyed and 10 homes with major damage. Wood County reported several hundred homes affected. The Red Cross reported 19 homes destroyed in Wood County. Wirt County had 21 homes destroyed and 10 with major damage. Jackson County had 14 homes with major damage. Mason County had no homes destroyed, with around 50 dwellings affected. Cabell County reported 5 homes with major damage. Wayne County had 8 homes with major damage. Mingo County saw 15 homes with major damage. Kanawha County reported 8 homes destroyed and 12 homes with major damage. Tyler County reported around 30 businesses destroyed and 8 with major damage. Repairs to the Barboursville sewage system were around \$200,000.

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